**Driving While Black/Driving While Brown: A Mathematics Project About Racial Profiling**



The purpose of this project is to investigate *racial profiling*, or *Driving While Black*or *Driving While Brown (DWB/DWB).*African Americans and Latinos/as have complained, filed suit, and organized against what they believe are racist police practices—being stopped, searched, harassed, and arrested because they “fit” a racial profile—they are African American (Black) or Latino/a (Brown). But is this true? How do we know? And can mathematics be a useful tool in helping us answer this question?

**SUBJECT**: Mathematics

**NUMBER OF DAYS LONG**: 3-5

**YEAR/GRADE**: 6-9 (originally created for 7-8, can be modified)

**CURRICULAR TOPIC:** Data analysis (collecting, analyzing data); Probability (simulations, *law of large numbers*, theoretical/experimental probabilities)

**TOPIC OBJECTIVE** 🡪

Students learn: (a) how to analyze data collected from a probability simulation; (b) how to set up their own simulation; (c) about the *law of large numbers*; (d) about the relationship of theoretical probabilities and empirical data.

**SOCIAL JUSTICE OBJECTIVE** 🡪

Students use mathematics to analyze racial profiling data and compare actual data to results of a probability simulation about racial profiling. This then becomes an entry point into a discussion about whether racial profiling is a real issue, is racism a factor, why does it occur, and if it’s a problem, what can one do about it.

**[NOTE: this is the Teacher’s version]**

**PART I.** **Review basic probability ideas.** To understand racial profiling, students need to understand several concepts: *randomness*, *experiment*, *simulation*,*sample size*, *experimental* and *theoretical probability*, and *the law of law numbers* (i.e., the more experiments you run, the closer you come to theoretical probabilities). One way to begin discussing these ideas is to have pairs of students toss a coin 100 times (the *experiment*) and record results, then combine the class data and have the whole class together examine how the combined data comes closer to a 50-50 split than do the individual pairs (the *law of large numbers*).

**PART II. Find Chicago’s racial breakdown**. Give each group of students a small bag with colored cubes to match the racial breakdown. I used 9 black (African Americans), 9 tan (whites), 6 reds (Latinos/as), and 1 yellow (Asians/Native Americans) to approximate Chicago racial proportions. Do not tell students the total number of cubes nor how many of each color. Students pick one cube without looking, record its color, and replace the cube. They record the results of each 10 picks in the chart below (tally marks work well). Each line in the chart below is the *cumulative total* of picks. Tell students that they are *conducting an experiment*(picking/replacing 100 times), *collecting data* (recording each pick), and *analyzing data* (determining from their simulation, how many there are of each color, and the total, and what are the Chicago racial/ethnic percents.

Make sure students record the fraction and percentage of each race/ethnicity for every 10 picks in the chart.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| # ofpicks | White# | White fract. | White % | AfAm# | AfAmfract. | AfAm% | Latino# | Latinofract. | Latino% | Asian# | Asianfract | Asian% |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |
| 70 |  |  |  |  |  |  |  |  |  |  |  |  |
| 80 |  |  |  |  |  |  |  |  |  |  |  |  |
| 90 |  |  |  |  |  |  |  |  |  |  |  |  |
| 100 |  |  |  |  |  |  |  |  |  |  |  |  |
| Total |  |  |  |  |  |  |  |  |  |  |  |  |

**Questions for each group. Emphasize *thorough* written explanations for all questions.**

1) Without opening up the bag, how many cubes of each color do you think are in it? WHY???

2) What happened as you picked more times, and what you think will happen if you pick 1,000 times?

**PART III**. **Investigating DWB/DWB**. Here are sample Illinois data based on police reports from 1987-1997. In an area of about 1,000,000 motorists, approximately 28,000 were Latinos/as. Over a certain period of time, state police made 14,750 *discretionary*traffic stops (e.g., if a driver changes lanes without signaling, or drives 1-5 mph over the speed limit, police *may* stop her or him but do not have to). Of these stops, 3,100 were of Latino/a drivers. Have students use what they learned in Part II and set up their own simulation of the situation using cubes (they may will need more cubes, but you can let them figure this out. In my class, they either used 3 different-colored cubes of 100, or 1 of 36—this part is very difficult!). Have them pick and replace, record the data, and calculate the results of simulating 100 “discretionary” stops.

**More group questions:**

3) What percentage of the motorists in Part III were Latino/a?

4) What percentage of the discretionary traffic stops were Latino/a?

5) How did you set up the simulation for problem #3 (how many “Latino/a” cubes and how many total?)? *Why* did you choose those numbers?

6) How many Latinos/as were picked out of 100 picks, and what percentage is that?

7) Do your results from your simulation experiment (#6) support the claim of racial profiling? Why or why not?

**Combine individual groups’ results and analyze as a whole class.**

**8) INDIVIDUAL WRITEUP**

1. What did you learn from this activity?

2. How did mathematics help you do this?

3. Do you think racial profiling is a problem, and if so, what do you think should be done about it?

4. What questions does this project raise in your mind?

**End with whole-class discussion.**

Courtesy: <http://www.teachersforjustice.org/2010/01/mathdriving-while-blackdriving-while.html>